

### **REMARKS**

Claims 1-6, 11-23, 26-31, 34-40, 42, 43, 46-50, 53, 54, 56-61, 63-65, 67, and 68 are amended herein. Claims 69-85 are canceled herein. Upon entry of this amendment, claims 1-68 will be pending in the present application.

Several paragraphs of the specification are also amended herein. These amendments include minor clarifying amendments, some of which are corrections to the application as-filed, and others of which are corrections to the Office's published version of the application (20030156989), which did not appear in the as-filed application.

#### **Allowable Subject Matter**

Applicants note with appreciation the recognition of claims 13, 20, and 26 as allowable if rewritten in independent form including all of the features of the base claim and any intervening claims. Claims 13, 20, and 26 are amended to incorporate such features and should therefore be in condition for allowance. Claims 1-6, 11, 12, 14-19, 21-23, 27-31, 34-40, 42, 43, 46-50, 53, 54, 56-61, 63-65, 67, and 68 also include minor clarifying amendments.

#### **Election Affirmation**

Applicants hereby affirm the election of Group I, claims 1-68. Applicants also hereby affirm the Examiner's withdrawal of claims 69-85 and cancel claims 69-85 herein.

#### **Information Disclosure Statement**

Enclosed is a Second Supplemental Information Disclosure statement. The statement includes an English language version of EP0658566, U.S. Patent No. 5,869,643. The statement also includes an English translation of the Nelles reference. This Supplemental Information Disclosure statement should alleviate the issues noted by the Examiner in the Office action.

Also included are copies of RoboSynthon, Inc.'s "MultiReactor-Reactor Block" and J-KEM Scientific Inc.'s "Reaction Blocks" for consideration by the Examiner. We have enclosed an uninitialled copy of page 8 of the December 26, 2001, Information Disclosure Statement. After reviewing the RoboSynthon, Inc. and J-KEM references, please initial the enclosed copy of page 8 and return it to the undersigned.

Also included are copies of U.S. Patent Nos. 4,243,636 and 6,036,923.

If the Examiner has any additional concerns, the undersigned would appreciate a telephone call to assist in resolving the concerns.

### Drawing Objections

Concerning the connecting relationship between the feed-pressurization station and the reaction vessels with impellers, Applicants respectfully assert that Fig. 2E does clearly demonstrate such a relationship. In particular, Fig. 2E discloses a feed-pressurization station 1205 connected to a distribution valve 400, which is connected to several reactors,  $R_1$  through  $R_n$ , and in particular reaction vessel 500 ( $R_1$ ), via feed line 300'. Reaction vessel 500 ( $R_1$ ) clearly includes an impeller stirrer 850. Thus, the relationship between the feed-pressurization station and the reaction vessels with impellers is clearly shown. An annotated copy of Fig. 2E is included immediately below for your reference:

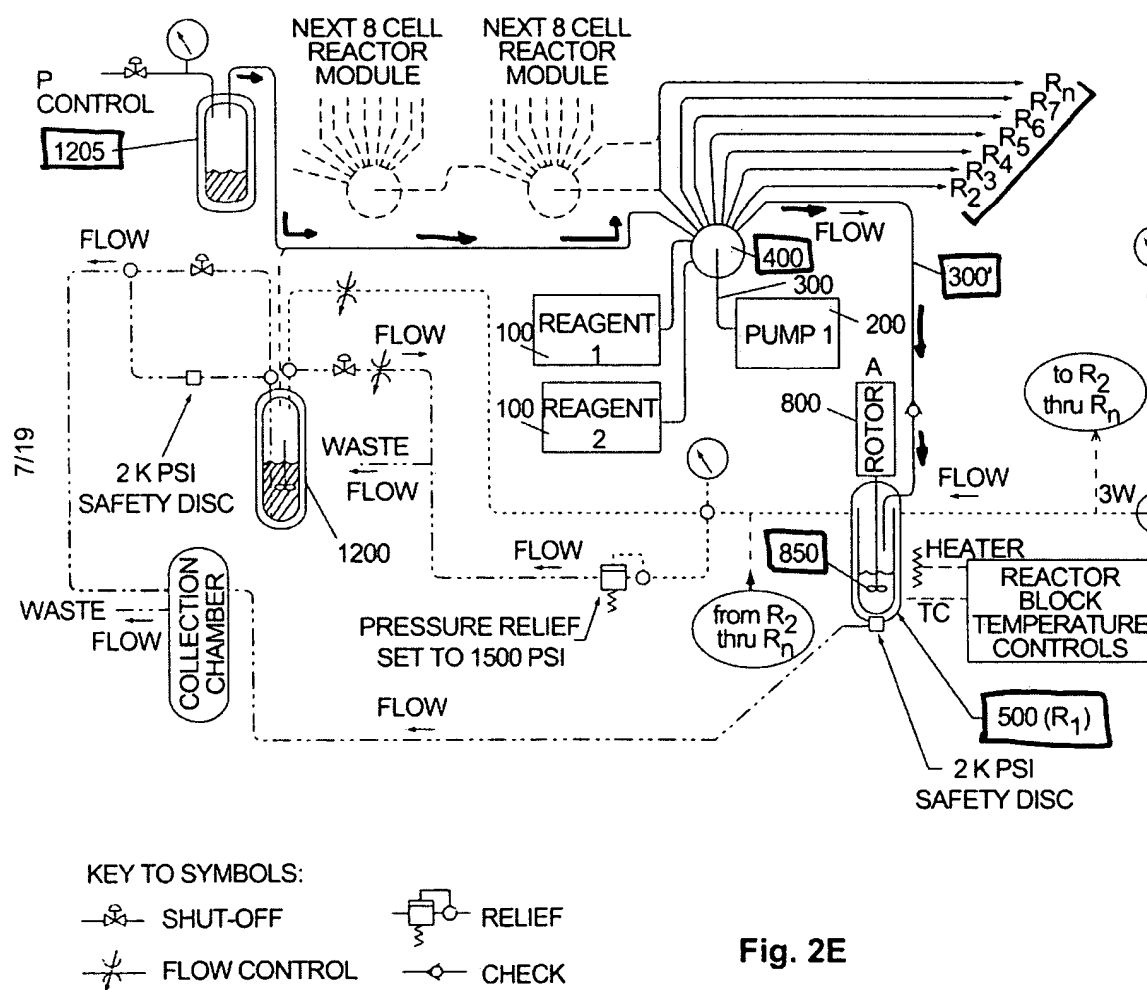
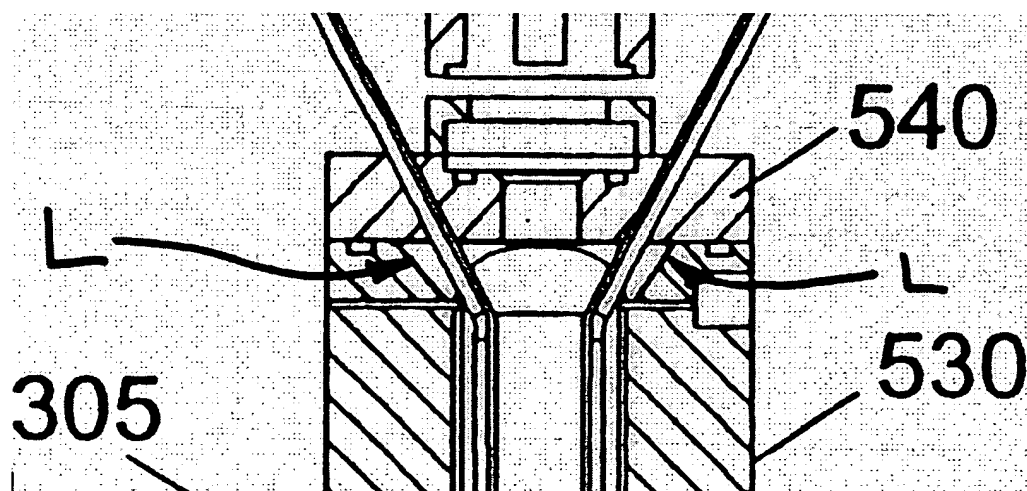


Fig. 2E

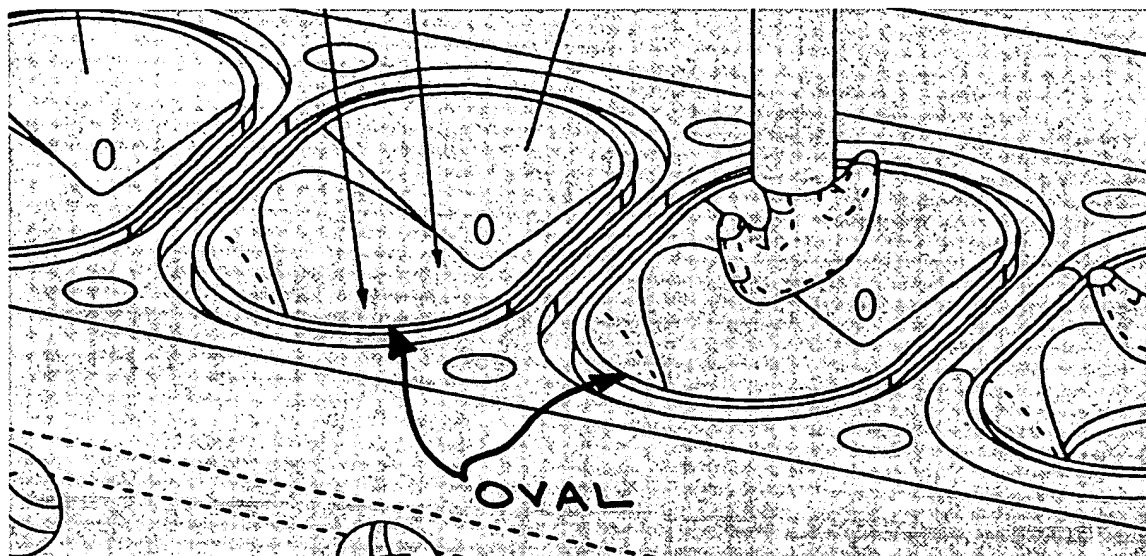
Thus, the stirred reaction vessel 500 (R<sub>1</sub>) of Fig. 2E clearly relates to the stirred reaction vessels 500 of Fig. 5A. Applicants respectfully request withdrawal of this objection. Regarding the shaft covers of claim 49, Applicants have amended Figs. 3A and 3G to include the shaft cover. In addition, Applicants have amended the specification to include reference numeral 864 corresponding to the shaft cover. According to the M.P.E.P., where an original claim constitutes a clear disclosure of subject matter, the claim may be treated on the merits and the drawings and description amended to show the subject matter.<sup>1</sup> Thus, the figure amendments and addition of the reference numeral does not add any new matter to the present application, because the shaft cover was included in original claim 49 and was described in the text of paragraphs 10, 17, and 65 of the original application. As such, Applicants respectfully request withdrawal of the objection.

With respect to the lower portion of the reaction cavity having a substantially circular cross section and the upper portion of the reaction cavity having a substantially oval cross section, the drawings clearly show such claimed features. Concerning the circular cross section of the lower portion, Figs. 4B, 4F, and 4G show the lower portion of the reaction cavity having a substantially circular cross section. Regarding the oval cross section of the upper portion, Figs. 4B and 5A show the upper portion of the reaction cavity having a substantially oval cross section. In Fig. 4B, a cross section, the oval cross section is defined by the two sloping lines L noted in the portion of Fig. 4B reproduced below:



<sup>1</sup> M.P.E.P. § 608.01(I).

In Fig. 5A, a perspective view, the oval cross section is shown as a full oval as noted in the portion of Fig. 5A reproduced below:



Because these figures sufficiently support the claimed lower portion of the reaction cavity having a substantially circular cross section and the upper portion of the reaction cavity having a substantially oval cross section, Applicants respectfully request withdrawal of the objection.

Concerning the feature of claim 25 comprising a liquid feed line having a first section positioned such that at least a portion thereof is inside a reaction cavity that contains or defines the reaction vessel, Fig. 5D shows this feature. In support, the specification states that "[t]he junction point between the first and second sections 300a, 300b of feed lines 300 **can be . . . internal to the reaction cavity (e.g. as shown in Fig. 5D, with individual heat-shrink connection).**"<sup>2</sup> Because Fig. 5D clearly supports the claimed liquid feed line having a first section positioned such that at least a portion thereof is inside a reaction cavity that contains or defines the reaction vessel, Applicants respectfully request withdrawal of the objection.

Regarding the header gasket of claim 48, Applicants have amended Figs. 4E, 4F, and 4G to include the header gasket. In addition, Applicants have amended the specification to include reference numeral 541 corresponding to the header gasket. As with the shaft cover discussed above and in accord with the M.P.E.P., where an original claim constitutes a clear disclosure of subject matter, the claim may be treated on the merits and the drawings and description amended to show the subject matter. Thus, the figure amendments and addition of the reference numeral do not add any new matter to the present application, because the header gasket was included in

<sup>2</sup> Application as filed, paragraph 78 (emphasis added).

original claim 48 and was described in the text of paragraphs 10, 17, and 54 of the original application. As such, Applicants respectfully request withdrawal of the objection.

If the Examiner plans to maintain any of the above drawing objections, the undersigned would appreciate a phone call to discuss the matter in more detail.

### **Claim Objections**

#### **Claim 7**

Applicants respectfully request reconsideration of the objection of claim 7 as being improper dependent form for failing to further limit the subject matter of a previous claim. Claim 7 further defines the parallel reactor of claims 2 or 3 by further comprising a **reactor block** comprising the four or more semi-continuous or continuous reaction vessels. Because neither claim 2 nor claim 3 discloses such a reactor block, claim 7 does further define the subject matter of claims 2 and 3. As such, Applicants respectfully request withdrawal of the objection of claim 7.

#### **Claim 10**

Applicants respectfully request reconsideration of the objection of claim 10 as being improper dependent form for failing to further limit the subject matter of a previous claim. Claim 10 further defines the parallel reactor of claims 3, 8, and 9 as comprising a reactor block comprising the four or more semi-continuous or continuous reaction vessels. Because none of claims 3, 8, and 9 discloses such a reactor block, claim 10 does further define the subject matter of claims 3, 8, and 9. As such, Applicants respectfully request withdrawal of the objection of claim 10.

#### **Claims 35 and 63**

Applicants respectfully request reconsideration of the objection of claim 35 as being improper dependent form for failing to further limit the subject matter of a previous claim. Claim 35 further defines the parallel reactor of claim 1 by requiring that **the four or more reaction vessels comprise semi-continuous flow reaction vessels**. More broadly, claim 1 only requires that the four or more reaction vessels be semi-continuous **OR** continuous, whereas claim 35 requires that **the reaction vessels comprise semi-continuous flow reaction vessels**, thereby

excluding any continuous reactors. Thus, claim 35 does further define the subject matter of claim 1 by limiting the type of reaction vessels to semi-continuous flow reaction vessels. As such, Applicants respectfully request withdrawal of the objection of claim 35.

Applicants respectfully request reconsideration of the objection of claim 63 on similar grounds. Claim 63 requires that **the four or more reaction vessels comprise semi-continuous flow reaction vessels**. More broadly, claims 58, 59, 60, and 61 only require that the four or more reaction vessels be semi-continuous **OR** continuous, whereas claim 63 requires all **semi-continuous**, thereby excluding any continuous reactors. As such, Applicants respectfully request withdrawal of the objection of claim 63.

#### **Claims 36 and 64**

Applicants respectfully request reconsideration of the objection of claim 36 as being improper dependent form for failing to further limit the subject matter of a previous claim. Claim 36 further defines the parallel reactor of claim 1 by requiring that **the four or more reaction vessels comprise continuous-flow reaction vessels**. More broadly, claim 1 only requires that the four or more reaction vessels be semi-continuous **OR** continuous, whereas claim 36 requires that **the reaction vessels be continuous**, thereby excluding any semi-continuous reactors. Thus, claim 36 does further define the subject matter of claim 1 by limiting the type of reaction vessels to continuous-flow reaction vessels. As such, Applicants respectfully request withdrawal of the objection of claim 36.

Applicants respectfully request reconsideration of the objection of claim 64 on similar grounds. Claim 64 requires that **the four or more reaction vessels comprise continuous-flow reaction vessels**. More broadly, claims 58, 59, 60, and 61 only require that the four or more reaction vessels be semi-continuous **OR** continuous, whereas claim 64 requires all **continuous**, thereby excluding any semi-continuous reactors. As such, Applicants respectfully request withdrawal of the objection of claim 64.

#### **35 U.S.C. § 112 Rejections**

##### **Claims 4 and 6**

Regarding the definiteness of claims 4 and 6, the specification states the following about the feed-pressurization station functioning as a waste vessel:

The feed-pressurization station can, in especially preferred embodiments, also function as a waste vessel, for collection of waste feed . . . . The feed-pressurization station 1205 can be any pressurized zone, but is depicted in FIG. 2E as comprising a liquid space and a gaseous headspace, with pressure in the pressure chamber being maintained at or near the desired system operating pressure. **In operation, a reagent in one of the aligned source vessels 100 can be taken up in the pump reservoir during the intake mode of the pumping cycle, and then discharged through feed line 300 and the distribution valve 400, which is selected to the feed-pressurization station 1205, maintained at the desired pressure.** Advantageously, prefeeding the one or more liquid reagents to the feed-pressurization station under pressure allows the upstream portion of the feed distribution system (feed line 300) to contain prepressurized liquid reagent feed--thereby minimizing feed-addition errors . . . . Subsequently, **the prepressurized liquid reagent feed in feed line 300 can then be fed into one or more of the reactor vessels 500** during the reaction under the reaction conditions through distribution valve 400 . . . .<sup>3</sup>

One skilled in the art would readily understand that the feed-pressurization station may function as a waste vessel from the above description. To pressurize a reagent from one of the source vessels, reagent is discharged from the pump 200, through feed line 300 and the distribution valve 400, and into the feed-pressurization station 1205. If the reagent sent to the feed-pressurization station has a volume in excess of the volume of the feed line 300 servicing the feed-pressurization station, the excess reagent is simply purged from the feed line 300 into the feed-pressurization vessel. Because the liquid level in the feed-pressurization station is below the outlet of the feed line 300, no contamination of the reagent within the feed line occurs. Thus, the feed-pressurization station functions in a dual role, both as a pressurization station and a waste vessel for excess reagent. Again, one skilled in the art would readily understand the use of these terms based upon the disclosure excerpted above and the remainder of the disclosure. As such, Applicants respectfully request withdrawal of the rejection of claims 4 and 6. If the Examiner plans on renewing the present rejection, the undersigned would appreciate a phone call to discuss the matter in more detail.

## Claim 25

Regarding the definiteness of claim 25, the specification states the following about the location of the first section of the feed line:

The junction point between the first and second sections 300a, 300b of feed lines 300 can be **external to the reaction cavity (e.g. as shown in Fig. 6A, with**

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<sup>3</sup> Application as filed, paragraph 44 (emphasis added).

**parallel interface 580 connection), or can be internal to the reaction cavity (e.g. as shown in Fig. 5D, with individual heat-shrink connection). More particularly in one embodiment, the first section 300a is positioned entirely outside of the reaction cavity 510, or at least partially outside of the reaction cavity 510, preferably at least outside of the reaction vessel 500 – such that it is substantially uncontaminated by the liquid reaction mixture (i.e., can be used again, preferably without or with only nominal cleaning effort). Hence, at least a portion of the first section 300a can be inside the reaction cavity 510.<sup>4</sup>**

The specification clearly contemplates different positions for the first section 300a of the feed line 300. In one example, the first section is positioned **entirely outside the reaction cavity 510** (e.g., parallel interface 580 connection, Fig 6A). In another, the first section is at least **partially outside the reaction cavity**. In yet another, the first section is at least **partially outside the reaction vessel 500**. In still another example, at least a portion of the first section is **inside the reaction cavity** (e.g., individual heat-shrink connection, Fig. 5D). Claim 25 requires that the first section be positioned such that **at least a portion thereof is inside a reaction cavity** that contains or defines the reaction vessel. This claim is clearly supported by the last example noted above, which refers to the individual heat-shrink connection of Fig. 5D. The specification expressly states that the "junction point between the first and second sections 300a, 300b of feed lines 300 . . . can be **internal to the reaction cavity** (e.g. as shown in Fig. 5D, with individual heat-shrink connection)." As such, Applicants respectfully request withdrawal of the rejection of claim 25. If the Examiner plans on renewing the present rejection, the undersigned would appreciate a phone call to discuss the matter in more detail.

### 35 U.S.C. § 103 Rejections

#### **Claim 1**

Reconsideration of the rejection of claim 1 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 1 defines a parallel, semi-continuous or continuous, **pressure reactor** comprising a **reactor block** comprising four or more semi-continuous or continuous reaction vessels for containing liquid reaction mixtures, each of the four or more reaction vessels being **pressurizable to a pressure of not less than about 50 psig**,

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<sup>4</sup> *Id.* at paragraph 78 (emphasis added).



four or more shaft-driven impellers corresponding to the four or more reaction vessels for stirring the reaction mixtures, and  
**at least four liquid feed lines in selectable fluid communication with each of the four or more reaction vessels**, each of the at least four liquid feed lines being in fluid communication with one or more liquid reagent source vessels, such that **one or more liquid reagents can be selectively fed from the one or more source vessels to each of the four or more reaction vessels during a reaction under reaction conditions.**<sup>5</sup>

Hutchins *et al.* and the other references of record fail to disclose these novel features. Briefly, Hutchins *et al.* disclose an automatic dissolution testing system comprising six vessels 31 received within a liquid reservoir 27 supported by a rack base 26. Hutchins *et al.* agitate the liquid in each vessel by rotating a shaft 34 and paddle 33 received in each vessel. A control head 38 mounts over each of the vessels, providing three liquid inlets (a fill nozzle 61, a wash nozzle 63, and an adjustment and replacement nozzle 65), two liquid outlets (an aspiration tip 62 and a sampling tip 64), and a sample tablet dispenser 57 for each vessel. In general, Hutchins *et al.* fail to teach or suggest many of the features of claim 1, including: a reactor block, pressurizable reaction vessels, a pressure reactor, four liquid feed lines in selectable fluid communication with each vessel, and feeding during reaction conditions.

Claim 1 is allowable because the cited prior art reference does not establish a *prima facie* case of obviousness. Among other things, "[t]o establish a prima facie case of obviousness, . . . the prior art reference (or references when combined) must teach or suggest **all** the claim limitations."<sup>6</sup> In this case, Hutchins *et al.* do not teach or suggest all the claim limitations. First, Hutchins *et al.* do not disclose a reactor block. Hutchins *et al.* disclose only a rack base 26 that supports the liquid reservoir 27 and mounts the six vessels 31.<sup>7</sup> The rack base 26 is clearly not the same structure as a reactor block, as is incorrectly concluded in the Office action.<sup>8</sup> As shown in Fig. 2 of Hutchins *et al.*, the rack base 26 is more akin to an open framework, such as a test tube rack, formed from several unnumbered portions, including a horizontal bottom member, upstanding vertical walls extending upward from the bottom member, and a horizontal top member extending between the top of the vertical walls. Spaces formed between the members and walls receive other separate pieces of the apparatus, including the liquid reservoir 27 and the

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<sup>5</sup> Emphasis added.

<sup>6</sup> M.P.E.P. § 706.02(j) (emphasis added).

<sup>7</sup> U.S. Patent No. 6,060,024, column 2, lines 52-57.

<sup>8</sup> April 23, 2004, Office action, page 8, line 11.

reaction vessels 31. This open framework is not comparable to Applicants' claimed reactor block.

In addition to not teaching or suggesting the use of a reactor block, Hutchins *et al.* does not teach or suggest reaction vessels pressurizable to a pressure of not less than about 50 psig. This omission is significant because the design and structural requirements of a pressurizable device are much different than a device that is open to the atmosphere. Hutchins *et al.* provide no teaching or suggestion to one skilled in the art regarding an apparatus for performing reactions at pressure. Applicants strongly disagree with the Office's position that "it appears that the stations are pressurizable to a pressure of not less than about 50 psig since pumps are well known to pressurize at such common pressures."<sup>9</sup> Applicants also strongly disagree with the Office's position that it would be obvious to one skilled in the art to modify the Hutchins *et al.* apparatus to perform dissolutions under pressurized conditions.<sup>10</sup>

Hutchins *et al.* merely disclose an apparatus for dissolution testing, which does not require that the contents of the vessels be pressurized. To the contrary, each of the control heads 38 includes a vertical passage 81 for dropping a tablet from above the control head, through the passage, and into a respective vessel.<sup>11</sup> This open passage eliminates any possibility that the vessels of Hutchins *et al.* are capable of being pressurized, because the open vertical passage for delivery of a tablet equalizes the pressure between the vessels and the atmosphere. Thus, in addition to failing to teach or suggest a pressurizable reactor, with the inclusion of the vertical passage, Hutchins *et al.* also teach away from the present invention by motivating one skilled in the art to conclude that the vessels need not be nor can be pressurized. Thus, the Office action's statement that Hutchins *et al.* disclose a pressure reactor<sup>12</sup> is clearly disputed by the teaching of Hutchins *et al.* itself. Utilizing the disclosure of Hutchins *et al.* to teach a pressurized or pressurizable reaction vessel improperly stretches the teaching of Hutchins *et al.* beyond its disclosure and in a direction completely different than what one skilled in the art would appreciate from its teaching.

In addition to failing to teach or suggest a reactor block or pressurizable reaction vessels, Hutchins *et al.* fail to teach or suggest **four liquid feed lines in selectable fluid communication** with each vessel for feeding **during a reaction and under reaction conditions**. Applicants

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<sup>9</sup> April 23, 2004, Office action, page 13, lines 3 and 4.

<sup>10</sup> *Id.* at page 13, lines 11-16.

<sup>11</sup> U.S. Patent No. 6,060,024, column 3, lines 38-57.

<sup>12</sup> April 23, 2004, Office action, page 8, line 10.

strongly disagree with the Office action's assertion that Hutchins *et al.* teach or suggest **four liquid feed lines in selectable fluid communication with each vessel**.<sup>13</sup> Hutchins *et al.* teach only **two**, not four or more, dispensing valves 109, 146 capable of selectable fluid communication. No other apparatus disclosed in Hutchins *et al.* provide such selectable fluid communication. Moreover, there is no teaching in Hutchins *et al.* for feeding to each of the four or more reaction vessels **during a reaction under reaction conditions**, which clearly may include pressures of not less than 50 psig in the reaction vessels. As such, Hutchins *et al.* cannot render claim 1 unpatentable.

For at least these reasons, claim 1 is believed to be in condition for allowance. Claims 5, 6, and 11-55, which depend directly or indirectly from claim 1, are submitted as patentable for the same reasons as claim 1.

## Claim 2

Reconsideration of the rejection of claim 2 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 2 defines a parallel, semi-continuous or continuous, **pressure reactor** comprising

four or more semi-continuous or continuous reaction vessels for containing liquid reaction mixtures, each of the four or more reaction vessels having a volume of not more than about 1 liter, and being **pressurizable to a pressure of not less than about 50 psig**,

four or more shaft-driven impellers corresponding to the four or more reaction vessels for stirring the reaction mixtures, and

at least **four liquid feed lines in selectable fluid communication with each of the four or more reaction vessels**, each of the at least four liquid feed lines being in fluid communication with one or more liquid reagent source vessels, such that **one or more liquid reagents can be selectively fed from the one or more source vessels to each of the four or more reaction vessels during a reaction under reaction conditions**.<sup>14</sup>

Claim 2 includes the following features, which are substantially identical to those of claim 1: (i) a pressure reactor comprising four or more semi-continuous or continuous reaction vessels . . . pressurizable to a pressure of not less than about 50 psig and (ii) at least four liquid feed lines in selectable fluid communication with each of the four or more reaction vessels . . . such that one

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<sup>13</sup> April 23, 2004, Office action, page 10, lines 6-11.

<sup>14</sup> Emphasis added.

or more liquid reagents can be selectively fed from the one or more source vessels to each of the four or more reaction vessels during a reaction under reaction conditions. Applicants submit that claim 2 is patentable over Hutchins *et al.* for the reasons discussed immediately above with respect to these features of claim 1. For at least these reasons, claim 2 is believed to be in condition for allowance. Claims 5 and 7, which depend directly from claim 2, are submitted as patentable for the same reasons as claim 2.

### Claim 3

Reconsideration of the rejection of claim 3 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 3 defines a parallel, semi-continuous or continuous, **pressure reactor** comprising  
four or more semi-continuous or continuous reaction vessels for  
containing liquid reaction mixtures, each of the four or more reaction vessels  
being **pressurizable to a pressure of not less than about 50 psig,**  
at least **four liquid feed lines in selectable fluid communication with**  
**each of the four or more reaction vessels,** each of the at least four liquid feed  
lines being in fluid communication with one or more liquid reagent source  
vessels, such that **one or more liquid reagents can be selectively fed from the**  
**one or more source vessels to each of the four or more reaction vessels during**  
**a reaction under reaction conditions,**  
at least one **feed-pressurization station pressurizable to a pressure of**  
**not less than about 50 psig,** at least a portion of each of the at least four liquid  
feed lines being in **selectable fluid communication with the at least one feed-**  
**pressurization station,** such that said portion of each of the at least four liquid  
feed lines can be selectively pressurized prior to feeding the one or more liquid  
reagents to the four or more reaction vessels.<sup>15</sup>

Claim 3 includes the following features, which are substantially identical to those of claim 1: (i) a pressure reactor comprising four or more semi-continuous or continuous reaction vessels . . . pressurizable to a pressure of not less than about 50 psig and (ii) at least four liquid feed lines in selectable fluid communication with each of the four or more reaction vessels . . . such that one or more liquid reagents can be selectively fed from the one or more source vessels to each of the four or more reaction vessels during a reaction under reaction conditions. Applicants submit that claim 3 is patentable over Hutchins *et al.* for the reasons discussed above with respect to these two features of claim 1.

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<sup>15</sup> Emphasis added.

In addition to the features noted above, claim 3 additionally defines at least one **feed-pressurization station pressurizable to a pressure of not less than about 50 psig**, such that at least a portion of each of the at least four liquid feed lines is in **selectable fluid communication with the at least one feed-pressurization station**. The feed-pressurization station allows for prepressurization of the aforesaid portion of each of the at least four liquid feed lines prior to feeding the one or more liquid reagents to the four or more reaction vessels. Thus, to render the claim unpatentable the prior art must show a feed-pressurization station **pressurizable to a pressure of not less than about 50 psig**. Hutchins *et al.* fail to teach or suggest such a feed-pressurization station. Hutchins *et al.* provide no teaching that the pump 94 and syringes 142, 143 may be utilized to create a station of increased pressure for communication with liquid feed lines. To function as a feed-pressurization station, the apparatus must be capable of pressurizing a station, or volume, to not less than about 50 psig and placing the pressurized station in communication with the liquid feed lines. To the contrary, the pumps and syringes of Hutchins *et al.* operate relatively simply, producing merely a flow of liquid media, as described below:

[M]edia pump 94 is energized producing a flow of liquid media from the tank 92 through the valves 108 and 109, the fill lines 19, and the fill tubings 41 for discharge out of the nozzles 61 into the vessels 31.<sup>16</sup>

To initiate a media replacement operation, . . . [t]he liquid syringe 142 is activated to accumulate a media charge of predetermined volume, and the air push syringe 143 is activated to accumulate a charge of air. After positioning of the valve 146 to connect the line 140 with an adjustment line 45 associated with a particular vessel 31, the liquid syringe 142 is activated to induce an appropriate flow of replacement media into the selected vessel 31 through the lines 140 and 45. Full delivery of the media replacement charge is provided by activation of the air syringe 143 to cause air flow through the valve 144, the liquid syringe 142 and the lines 140 and 45.<sup>17</sup>

Hutchins *et al.* provide no teaching or suggestion that the pump or the syringes are capable of prepressurizing the feed lines to not less than about 50 psig prior to feeding liquid to a pressurized vessel. Media pump 94 and liquid syringe 142 merely produce a flow of liquid media into a respective vessel. The only described function of air syringe 143 is to clear the liquid syringe 142, valve 144, and lines 140, 45 of any residual liquid materials once the liquid syringe has displaced the media of which it is capable. Nowhere does Hutchins *et al.* teach or suggest a feed-pressurization station pressurizable to a pressure of not less than about 50 psig

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<sup>16</sup> U.S. Patent No. 6,060,024, column 4, lines 23-27.

<sup>17</sup> U.S. Patent No. 6,060,024, column 5, lines 16-29.

with at least a portion of each of the at least four liquid feed lines being in selectable fluid communication with the at least one feed-pressurization station.

For at least these reasons, claim 3 is believed to be in condition for allowance. Claims 4 and 7-10, which depend directly or indirectly from claim 3, are submitted as patentable for the same reasons as claim 3.

#### Claim 4

Reconsideration of the rejection of claim 4 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 4 further defines the pressure reactor of claim 1 wherein the feed-pressurization station comprises a waste vessel. Applicants clearly articulate the benefits of such a waste vessel in the specification:

The feed-pressurization station can . . . also function as a waste vessel, for collection of waste feed . . . . Advantageously, prefeeding the one or more liquid reagents to the feed-pressurization station under pressure allows the upstream portion of the feed distribution system (feed line 300) to contain prepressurized liquid reagent feed--**thereby minimizing feed-addition errors that would otherwise (i.e., in the absence of such pre-pressurizing) arise due to compressibility of the liquid reagent, and in some cases, due to pressure-induced expansion of the feed line** (e.g. when the feed line is a non-rigid, expandable material, such as Teflon or other non-rigid polymers). **Such errors could be appreciable in smaller-scale systems and/or where exacting control over total volume of feed addition or feed rates are important for the reaction of interest.** Subsequently, the prepressurized liquid reagent feed in feed line 300 can then be fed into one or more of the reactor vessels 500 during the reaction under the reaction conditions . . . already being at the reaction pressure . . . .<sup>18</sup>

Thus, the feed-pressurization station performs two functions, pre-pressurization of feed and containment of waste materials. The waste collection function is particularly important because the feed line 300 (the upstream portion of the feed distribution system) may be fed with more material than is necessary, such that excess material exits the end of the feed line into the vessel. This premeasures the amount of material in the feed line 300, corresponding to a known amount. Moreover, the material is pre-pressurized, such that feed-addition errors, which may arise due to liquid compressibility or pressure-induced expansion of the feed line, are minimized.

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<sup>18</sup> Application as filed, paragraph 44 (emphasis added).

Hutchins *et al.* provide no corresponding structure capable of rendering these benefits. In particular, no vessel of any kind is disclosed that acts as both a prepressurization station and a waste vessel. Moreover, Hutchins *et al.* teach away from such a design by teaching a waste line 149 wholly separate from the syringe pump 142 (Fig. 6). Therefore, one skilled in the art would not be motivated to modify Hutchins *et al.* to provide the structure of the claimed invention.

For at least these reasons, claim 4 is believed to be in condition for allowance.

#### Claim 5

Reconsideration of the rejection of claim 5 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 5 defines a pressure reactor comprising at least one **feed-pressurization station**, substantially identical to the station of claim 3. Applicants submit that claim 5 is patentable over Hutchins *et al.* for the reasons discussed above with respect to the feed-pressurization station of claim 3. For at least these reasons, claim 5 is believed to be in condition for allowance. Claim 6, which depends directly from claim 5, is submitted as patentable for the same reasons as claim 5.

#### Claim 6

Reconsideration of the rejection of claim 6 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 6 defines a pressure reactor wherein the feed-pressurization station comprises a waste vessel, substantially as claimed in claim 4. Applicants submit that claim 6 is patentable over Hutchins *et al.* for the reasons discussed above with respect to the waste vessel of claim 4. For at least these reasons, claim 6 is believed to be in condition for allowance.

#### Claims 7 and 10

Reconsideration of the rejections of claims 7 and 10 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claims 7 and 10 each further define their respective reactors as comprising a **reactor block** with four or more semi-continuous or continuous reaction vessels, substantially as claimed in claim 1. Thus, Applicants submit that claims 7 and 10 are patentable over Hutchins *et al.* for the reasons discussed above with respect to the reactor block of claim 1. For at least these reasons, claims 7 and 10 are believed to be in condition for allowance.

### Claim 11

Reconsideration of the rejection of claim 11 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 11 further defines the reactor of claim 1 wherein the at least four liquid feed lines are provided to each of the four more reaction vessels through **one or more modular feed-line subassemblies**, each of the feed-line subassemblies being **adapted to releasably engage the reactor block** and to support at least two of said liquid feed lines passing into a respective reaction vessel. These subassemblies provide important benefits discussed in the application, including: (i) group servicing of four or more reaction vessels, (ii) allowing the at least two liquid feed lines to enter the reactor block in modular fashion as a bundled collective group, and (iii) providing efficient connection and/or disconnection to and/or from the reactor block.<sup>19</sup>

Hutchins *et al.* fail to disclose these novel features and therefore cannot provide the important benefits noted above. First, Hutchins *et al.* disclose no reactor block, as discussed above, and therefore disclose no feed-line subassemblies **adapted to releasably engage a reactor block**. Second, Hutchins *et al.* disclose no modular feed-line subassemblies for supporting at least two liquid feed lines. Referring to Figs. 2 and 3 of Hutchins *et al.*, it is apparent that the wash line 16, the media fill line 19, and the media replacement line 45 are each separately directed toward the vessel 31, without a feed-line subassembly supporting at least two of the lines. The lines each enter the reactor head 38 separately, such that the benefits of (i) group servicing (i.e., servicing several lines at once), (ii) modular, bundled line entry, and (iii) efficient connection and/or disconnection are not provided. Among other things, to establish a *prima facie* case of obviousness, the prior art reference must teach or suggest all the claim limitations, which Hutchins *et al.* fails to do. As such, Hutchins *et al.* cannot render claim 11 unpatentable.

For at least these reasons, claim 11 is believed to be in condition for allowance. Claim 12, which depends directly from claim 11, is submitted as patentable for the same reasons as claim 11.

### Claim 12

Reconsideration of the rejection of claim 12 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

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<sup>19</sup> Application as filed, paragraphs 71 and 72.



Claim 12 further defines the reactor of claim 11 wherein the one or more modular feed-line subassemblies discussed above comprises a **ferrule comprising two or more apertures adapted to sealingly support the at least two liquid feed lines** when the ferrule is engaged with the reactor block. By including apertures for sealingly supporting the liquid feed lines, the ferrule provides an additional function (beyond those discussed above with respect to the modular feed-line subassemblies), namely sealing the liquid feed lines as they pass through the ferrule and into the pressurizable reaction cavity. By sealing the liquid feed lines within the apertures, the ferrule may be readily engaged with the reactor block without concern for the seal between the ferrule and the lines. Thus, as the number of liquid feed lines increases, the number of additional pressure-tight connections with the reactor block required to seal the additional liquid feed lines does not increase, because the ferrule seals each line.

Hutchins *et al.* fail to disclose these novel features and therefore cannot provide the important additional benefits noted above. First, Hutchins *et al.* disclose no reactor block, as discussed above, and therefore disclose no ferrules for engaging such a block. Second, Hutchins *et al.* do not disclose **two or more apertures adapted to sealingly support the at least two liquid feed lines**. Hutchins *et al.* provide no teaching or suggestion that the wash line 16, the media fill line 19, and the media replacement line 45 are each sealingly supported. As discussed above, Hutchins *et al.* provide no teaching or suggestion for pressurization or sealing of any kind.

In addition, Applicants strongly disagree with the statement in the Office action that the control head 38 of Hutchins *et al.* may be considered a ferrule.<sup>20</sup> There is no teaching or suggestion in Hutchins *et al.* that the control head comprises two or more apertures adapted to sealingly support the at least two liquid feed lines. In fact, because the vessel is not sealed (see discussion of claim 1), Hutchins *et al.* teach away from sealingly supporting the wash line 16, the media fill line 19, and the media replacement line 45. Moreover, Applicants strongly disagree with the Office's position that providing a "ferrule with apertures sealingly supporting the feed lines"<sup>21</sup> is obvious. The Office has not met its burden of establishing a *prima facie* case of obviousness, because Hutchins *et al.* clearly do not teach or suggest all of the claim limitations. Hutchins *et al.* provide no motivation for one skilled in the art to sealingly support the lines to prevent leaks. In fact, because each control head 38 includes an open vertical

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<sup>20</sup> April 23, 2004, Office action, page 8, lines 20-21.

<sup>21</sup> *Id.* at page 12, lines 14-16.

passage 81, thereby eliminating any possibility that the vessels are sealed and pressurizable, Hutchins *et al.* also teach away from the present claim by motivating one skilled in the art to conclude that the vessels need not be nor can be pressurized. As a result, the cited references do not render claim 12 obvious.

For at least these reasons, claim 12 is believed to be in condition for allowance.

### Claim 19

Reconsideration of the rejection of claim 19 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 19 further defines the reactor of claim 1 wherein

each of the four or more reaction vessels is defined by or contained in a lower portion of a reaction cavity in the reactor block, the reaction cavity being further defined by an upper portion in the reactor block, **the upper portion of the reaction cavity having a larger cross section, taken radially, relative to the lower portion, and the reaction cavity being sized such that two or more of the at least four liquid feed lines can be passed through the upper portion to the lower portion of the reaction cavity.**<sup>22</sup>

As noted in the application, the larger cross section is important because it provides additional space for passing the liquid feed lines through the upper portion to the lower portion of the reaction cavity.<sup>23</sup> In other words, the feed lines may be configured to enter the upper portion of the reaction cavity with larger spacings between adjacent feed lines, or at angles differing from one another or the general orientation of the reaction cavity, which may be accommodated by the larger cross section in the upper portion. Within the upper portion, the feed lines may be routed closer to one another and/or at an angle consistent with the general orientation of the reaction cavity, so that the feed lines may readily fit into the lower portion of the reaction cavity, which has a smaller cross section.

Although the vessels of Hutchins *et al.* are smaller in cross-section near the bottom, due to the hemispherical curvature at the lower end of the vessel, the nozzles 61, 63, 65 of Hutchins *et al.* do not pass **through the upper portion to the lower portion of the reaction cavity**, as is required by claim 19. As is clearly shown in Fig. 2 of Hutchins *et al.*, none of the nozzles of Hutchins *et al.* pass **through the upper portion to the lower, narrower, portion of the vessel**, as is required by claim 19. As a result, the cited references do not render claim 19 obvious.

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<sup>22</sup> Emphasis added.

<sup>23</sup> Application as filed, paragraph 57.

For at least these reasons, claim 19 is believed to be in condition for allowance. Claims 20, which depends directly from claim 19, is submitted as patentable for the same reasons as claim 19.

### Claim 31

Reconsideration of the rejection of claim 31 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 31 further defines the reactor of claim 1 further comprising a **parallel feed-line interface providing fluid communication between a first section and a second section of each of at least four liquid feed lines**, the interface being releasable with respect to the first section and additionally or alternatively, to the second section, of each of the at least four liquid feed lines. The parallel feed-line interface is advantageous because the parallel feed-line interface provides for group connection and disconnection of the feed lines. This is particularly advantageous when several of the feed lines need to be disconnected or connected at one time. Without such a parallel feed-line interface, individual mechanical connectors (e.g., union couplers) associated with each feed-line would need to be separately disconnected or connected. Such individual manipulation of separate connections is both time and labor intensive, as compared with connecting or disconnecting the parallel feed-line interface as a unit.

Hutchins *et al.* fail to disclose such a feed-line interface capable of connecting or disconnecting multiple feed line connections as a unit. Each of the lines 16, 19, 45 of Hutchins *et al.* are individually connected to the control head 38, rather than connected through an interface. In addition, contrary to the Office action, the control unit 11 and cabinet 12 cannot be considered a parallel feed-line interface.<sup>24</sup> Claim 31 requires that the parallel feed-line interface provide fluid communication between (1) a first section and (2) a second section of each of at least four liquid feed lines. In an attempt to demonstrate a teaching of this element, the Office action states that the control unit and cabinet provide communication between the tubes (39, 41, 44) and the lines (16, 19, 45). But the specification and figures of Hutchins *et al.* demonstrate that the control unit 11 and cabinet 12 do not provide such fluid communication. Instead, the control unit 11 and cabinet 12 act as the **source** for the materials, which flow **from** the control unit toward the vessels in the following sequence: first through sets of lines 20, second through

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<sup>24</sup> April 23, 2004, Office action, page 9, lines 12-16.

individual lines 16, 19, 45, and third through the tubes 39, 41, 44.<sup>25</sup> The control unit and cabinet do not act as an interface **between** sections of the fluid lines, but rather as a fluid **source**, at one end of the flow. Thus, because the control unit and cabinet do not provide fluid communication **between** a first section and a second section of each of at least four liquid feed lines, they do not teach an **interface** and cannot render claim 31 unpatentable.

For at least these reasons, claim 31 is believed to be in condition for allowance.

### Claim 37

Reconsideration of the rejection of claim 37 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 37 depends from claim 1 and therefore includes both (i) **four or more gas ports** providing fluid communication to a respective one of the four or more reaction vessels **and** (ii) **at least four liquid feed lines** in selectable fluid communication with each of the four or more reaction vessels. This combination requires that each vessel have a gas port **in addition** to the at least four liquid feed lines. The Office's position that the "discharge" lines (16, 19, 45) constitute the gas ports is untenable, because claim 37 clearly indicates that the four or more gas ports, each in fluid communication with a respective vessel, are in addition to and distinct from the liquid discharge lines. Because claim 37 clearly requires an additional gas port, separate from the liquid feed lines, it is improper to define the liquid discharge lines of Hutchins *et al.* as both liquid feed lines and gas ports. Moreover, Hutchins *et al.* provides no teaching for a gas port of any kind. The Office's position that entrained bubbles in a flow of liquid is the same as gaseous flow through a gas port is also unreasonable.<sup>26</sup> Claim terms must be interpreted according to their customary meaning,<sup>27</sup> and the Office's assertion that entrained bubbles are gaseous flow ignores the customary and ordinary meaning of the claim terms.

For at least these reasons, claim 37 is believed to be in condition for allowance. Claim 39, which depends directly from claim 37, is submitted as patentable for the same reasons as claim 37.

### Claim 38

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<sup>25</sup> U.S. Patent No. 6,060,024, column 2, lines 41-51 and 64-67; column3, lines 3-26 (Figs. 1, 2, and 6).

<sup>26</sup> April 23, 2004, Office action, page 11, lines 8-9.

<sup>27</sup> Brookhill-Wilk 1 LLC v. Intuitive Surgical Inc., 67 U.S.P.Q.2d 1132, 1136 (Fed. Cir. 2003).

Reconsideration of the rejection of claim 38 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 38 is similar to claim 37, except that the claim requires four or more **pairs** of gas ports, rather than four or more gas ports. Thus, claim 38 is submitted as patentable for the same reasons as discussed immediately above with respect to claim 37.

#### **Claim 39**

Reconsideration of the rejection of claim 39 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 39 defines each of the four or more gas ports as a gaseous feed port, a pressure monitoring port, a pressure control port, or a gaseous purge port. Hutchins *et al.* clearly fail to disclose any of these novel elements, as there is no mention of gaseous feed, pressurization of any kind, or gas purging. Hutchins *et al.* discuss liquid addition only, and provide **no teaching** of gaseous addition, removal, purging, or control. Therefore, Applicants strongly disagree with the Office's assertion that "it would have been obvious to one having ordinary skill in the art to provide each reaction well with a pressure monitoring port, gaseous feed ports, [and] gaseous purge ports . . . ." <sup>28</sup> The Office has not met its burden of establishing a *prima facie* case of obviousness, because Hutchins *et al.* clearly does not teach or suggest all of the claim elements. Merely stating that those specific claim elements would be obvious to one skilled in the art ignores the burden facing the Office of establishing a *prima facie* case of obviousness. For at least these reasons, claim 39 is believed to be in condition for allowance.

#### **Claim 41**

Reconsideration of the rejection of claim 41 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 41 defines a reactor wherein the four or more reaction vessels comprise wells formed in the reactor block. As discussed above, Hutchins *et al.* fail to teach or suggest the use of a reactor block comprising the four or more semi-continuous or continuous reaction vessels. The addition of wells to claim 41 further highlights the lack of relevant teaching provided by Hutchins *et al.* For this reason, and for those reasons discussed above with respect to the reactor block of claim 1, claim 41 is believed to be in condition for allowance.

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<sup>28</sup> page 11, lines 11-14

#### Claim 42

Reconsideration of the rejection of claim 42 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 42 defines a reactor wherein the four or more reaction vessels comprise **removable liners** supported by wells formed in the reactor block, each of the liners having an interior surface defining a cavity for containing a respective one of the liquid reaction mixtures, and an external surface dimensioned to fit within the wells. Liners provide the added benefit of being removable, such that the turnaround of the reactor may be shortened. In addition, the removed vessels may be discarded, or cleaned separately, while the reactor may proceed with additional reactions. Removable liners increase the productivity of a given reactor because they eliminate a time-consuming washing step, and allow replacement of the used liners with a replacement set, thereby allowing the reactor to operate more often.

Hutchins *et al.* fail to disclose removable liners and therefore cannot render claim 42 unpatentable. Applicants strongly disagree with the Office's position that it would have been obvious in light of Hutchins *et al.* to provide removable reaction vessels.<sup>29</sup> There is no teaching or suggestion in Hutchins *et al.* to provide removable reaction vessels. In fact, Hutchins *et al.* teaches away from removable liners by providing for *in situ* washing of its reaction vessels. One skilled in the art studying Hutchins *et al.* would not be motivated to incorporate removable vessels because Hutchins *et al.* clearly teaches one to wash the vessels between dissolution experiments. As such, Hutchins *et al.* cannot render claim 42 unpatentable.

For at least these reasons, claim 42 is believed to be in condition for allowance. Claim 43, which depends directly from claim 42, is submitted as patentable for the same reasons as claim 42.

#### Claim 46

Reconsideration of the rejection of claim 46 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 46 defines a reactor wherein **the reactor block comprises a base block comprising four or more wells** defining or containing the four or more reaction vessels, and **a header block positioned over the base block to form four or more pressurizable reaction**

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<sup>29</sup> April 23, 2004, Office action, page 15, lines 11-16.

**cavities**, each of the four or more reaction cavities defining or containing a respective one of the four or more reaction vessels. None of the references of record disclose these novel features. In particular, Hutchins *et al.* fail to disclose a reactor block of any kind, as discussed above with respect to claim 1. For the same reasons, Hutchins *et al.* fail to disclose a reactor block comprising a base block and a header block.

Applicants strongly disagree with the statement in the Office action that Hutchins *et al.* disclose "a base block (26) and a header block (30)."<sup>30</sup> The rack base 26 of Hutchins *et al.* cannot be considered a base block, and is more akin to an open framework, such as a test tube rack, formed from several unnumbered portions, including a horizontal bottom member, upstanding vertical walls extending upward from the bottom member, and a horizontal top member extending between the top of the vertical walls. Spaces formed between the members and walls receive other separate pieces of the apparatus, including the liquid reservoir 27 and the reaction vessels 31. This open framework is not comparable to Applicants' claimed reactor block.

Moreover, the base plate 30 of Hutchins *et al.* cannot be considered a header block, because the header block defined by claim 46 must be positioned over the base block to form **four or more** pressurizable reaction cavities. The base plate clearly does not have this capability. As shown in Fig. 2 of Hutchins *et al.*, a separate base plate 30 is associated with each vessel 31. Therefore, the multiple base plates cannot be considered a header block capable of being positioned over the base block to form **four or more** pressurizable cavities. Even if Hutchins *et al.* did disclose a base block and pressurizable cavities, both of which it clearly does not, the multiple base plates 30 cannot be considered a teaching of a header block because none of the base plates is capable of forming **four or more** pressurizable cavities. As such, Hutchins *et al.* cannot render claim 46 unpatentable.

For at least these reasons, claim 46 is believed to be in condition for allowance. Claims 47-49, which depend directly or indirectly from claim 46, are submitted as patentable for the same reasons as claim 46.

#### **Claim 49**

Reconsideration of the rejection of claim 49 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

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<sup>30</sup> April 23, 2004, Office action, page 8, line 11.

Claim 49 defines **four or more disposable shaft covers** corresponding to the four or more shaft-driven impellers, each of the four or more shaft covers being **adapted to mask at least a non-disposable portion of a shaft of a respective shaft-driven impeller received in a respective reaction cavity**. None of the references of record disclose these novel features. Hutchins *et al.* do not disclose a shaft cover that is adapted to mask a non-disposable portion of the shaft **received in** a respective reaction cavity. Contrary to the Office action, the control head 38 cannot constitute such a cover, because the portion of the shaft within the control head is not **received in** the reaction cavity, but is outside the reaction cavity, where the risk of exposure is lessened.<sup>31</sup> The Office action also states that the "polygonal piece near the drive assembly (fig. 2)" constitutes such a cover.<sup>32</sup> However, Applicants are unclear as to what polygonal piece the Office refers. If the Office is referring to the polygon depicted with six sides and located near the top of the shaft 34, above the control head 38 and below the drive assembly 35 in Fig. 2, Applicants assert that this piece cannot constitute such a cover because the portion of the shaft associated with the polygonal piece is not "received in a respective reaction cavity." Rather, the polygonal piece is well above the reaction cavity and therefore provides no masking, as claim 49 requires. If Applicants are not referring to the correct "polygonal piece," the undersigned requests a clarification from the Examiner in the next communication. As such, Hutchins *et al.* cannot render claim 49 unpatentable.

For at least these reasons, claim 49 is believed to be in condition for allowance.

#### **Claim 50**

Reconsideration of the rejection of claim 50 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 50 includes the following features, which are substantially identical to those of claim 46: (i) a base block comprising four or more wells defining or containing the four or more reaction vessels; and (ii) a header block positioned over the base block to form four or more pressurizable reaction cavities, each of the four or more reaction cavities defining or containing a respective one of the four or more reaction vessels. Applicants submit that claim 50 is patentable over Hutchins *et al.* for the reasons discussed above with respect to these two features of claim 46.

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<sup>31</sup> April 23, 2004, Office action, page 8, line 22 to page 9, line 2.

<sup>32</sup> *Id.*



In addition to the reasons discussed above, claim 50 additionally defines the header block as comprising **four or more feed-line subassembly receiving ports** adapted to receive respective modular feed-line subassemblies. These ports provide appropriate alignment and support for each of the modular feed-line subassemblies and the liquid feed lines supported by the subassembly. Hutchins *et al.* do not teach or suggest any ports for receiving modular feed-line subassemblies. As such, Hutchins *et al.* cannot render claim 50 unpatentable.

For at least these reasons, and the reasons given above with respect to claim 46, claim 50 is believed to be in condition for allowance.

### Claims 53 and 54

Reconsideration of the rejection of claims 53 and 54 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claims 53 and 54 further define the pressure to which the reaction vessels are pressurizable. Claim 53 defines a reactor pressurizable to not less than about 400 psig, and claim 54 defines a reactor pressurizable to a pressure ranging from about 500 psig to about 1500 psig. None of the references of record disclose these novel features. As discussed above, Hutchins *et al.* do not disclose pressurization of any kind, and in fact teach away from such pressurization by maintaining the vessels open to the atmosphere, via the open vertical passage. Moreover, it would not be obvious to one skilled in the art to modify Hutchins *et al.* to construct the reactor from stronger/thicker materials and effectively seal the reactor, as stated in the Office action.<sup>33</sup> Designing pressurized reactors goes beyond utilizing stronger/thicker materials and simply providing seals. For example, utilizing stronger and thicker materials for the vessels of Hutchins *et al.* may make temperature control via the bath less responsive, if not impossible. Moreover, the entire shaft and head would need to be redesigned to seal around the rotating shaft. Establishing such reaction pressures while maintaining the functionality of shaft-driven impellers and at least four liquid feed lines would not be obvious to one skilled in the art in view of only the limited teaching of Hutchins *et al.* for an unpressurized, dissolution apparatus. As such, Hutchins *et al.* cannot render claims 53 and 54 unpatentable.

For at least these reasons, claims 53 and 54 are believed to be in condition for allowance.

### Claim 55

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<sup>33</sup> April 23, 2004, Office action, page 13, lines 9-16.

Reconsideration of the rejection of claim 55 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 55 further defines the reactor block as comprising one or more temperature control elements for **individual or modular temperature control** of the four or more reaction vessels. None of the references of record disclose these novel features. In particular, Hutchins *et al.* teaches only **group temperature control** via a bath. Applicants strongly disagree with the assertion in the Office action that the Hutchins *et al.* apparatus has "control elements (46, 66) for individual or modular temperature control of the reaction vessels."<sup>34</sup> Hutchins *et al.* do disclose a temperature detector 46 comprising a temperature sensing thermistor 66 associated with the control head 38 for **monitoring** the temperature of a respective vessel 31. But Hutchins *et al.* do not teach or suggest any mechanism for **individual or modular temperature control**. The only temperature control means disclosed in Hutchins *et al.* is the liquid reservoir 27 with heated water for controlling the temperature of all the vessels together.<sup>35</sup> There is no provision in Hutchins *et al.* for **individual or modular** control. Without such a teaching or suggestion, Hutchins *et al.* cannot render claim 55 unpatentable.

For at least these reasons, claim 55 is believed to be in condition for allowance.

#### Claim 56

Reconsideration of the rejection of claim 56 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 56 defines a parallel, semi-continuous or continuous, pressure reactor comprising

**a reactor block comprising a base block and a header block, the base block comprising eight or more wells, each of the eight or more wells containing a removable reaction vessel for containing a liquid reaction mixture, the reaction vessels having a volume of not more than about 1 liter, the header block being removably positioned over the base block for access to the reaction vessels and for forming eight or more pressurizable reaction cavities that include the eight or more wells containing the reaction vessels, the reaction cavities being pressurizable to a pressure of not less than about 100 psig, eight or more shaft-driven impellers corresponding to the eight or more reaction vessels for stirring the reaction mixtures, the eight or more shaft-driven impellers being supported by the header block, at least four liquid feed lines in selectable fluid communication with each of the eight or more reaction vessels, each of the at least four liquid feed lines being in fluid communication with one or more liquid reagent source vessels, and**

<sup>34</sup> April 23, 2004, Office action, page 10, lines 16-17.

<sup>35</sup> U.S. Patent No. 6,060,024, column 2, lines 52-29.

**eight or more modular feed-line subassemblies releasably received in receiving ports in the header block, each of the eight or more feed-line subassemblies being adapted to sealingly support the at least four liquid feed lines feeding a respective reaction vessel.**

Claim 56 includes the following features, which are similar to those of claim 1: (i) a pressurizable pressure reactor, (ii) a reactor block, and (ii) liquid feed lines in selectable fluid communication with each of the reaction vessels, each of the liquid feed lines being in fluid communication with one or more liquid reagent source vessels. Applicants submit that claim 56 is patentable over Hutchins *et al.* for the reasons discussed above with respect to these similar features of claim 1.

Claim 56 also specifies a base block comprising wells and a header block positioned over the base block, similar to the base block and header block of claim 46. Applicants submit that claim 56 is patentable over Hutchins *et al.* for the reasons discussed above with respect to these similar features of claim 46.

Claim 56 further defines eight or more modular feed-line subassemblies releasably received in receiving ports in the header block to sealingly support the at least four liquid feed lines feeding a respective reaction vessel. Claim 11 discloses similar modular feed-line subassemblies, except that the feed-line subassemblies of claim 56 even more clearly differentiate over the prior art, because there are eight or more, rather than one or more, subassemblies and the subassemblies support four, rather than two, liquid feed lines. As such, Applicants submit that claim 56 is patentable over Hutchins *et al.* for the reasons discussed above with respect to the similar features of claim 11.

In addition to the foregoing features, claim 56 also defines a pressure reactor having **eight or more wells forming eight or more pressurizable reaction cavities, eight or more shaft-driven impellers** corresponding to the eight or more reaction vessels, **at least four liquid feed lines in selectable fluid communication with each of the eight or more reaction vessels,** and **eight or more modular feed-line subassemblies releasably received in receiving ports in the header block and supporting respective groups of at least four liquid feed lines** to each of the eight or more reaction vessels. Hutchins *et al.* clearly fail to teach or suggest **eight or more** wells, cavities, impellers, and feed-line subassemblies, all within a pressure reactor. The integration of such subassemblies with eight individually stirred reactors pressurizable to 100 psi is well beyond the teaching or suggestion of Hutchins *et al.* As such, Hutchins *et al.* cannot render claim 56 unpatentable.

For at least these reasons, and the reasons given above with respect to claims 1, 11, and 46, claim 56 is believed to be in condition for allowance. Claim 57, which depends directly from claim 56, is submitted as patentable for the same reasons as claim 56.

#### **Claim 58**

Reconsideration of the rejection of claim 58 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 58 defines four or more releasably engageable modular feed-line subassemblies releasably received in receiving ports in the reaction vessels or in a reactor block that defines or contains the reaction vessels, each subassembly supporting two or more of the at least four liquid feed lines. Claim 11 discloses similar modular feed-line subassemblies. As such, Applicants submit that claim 58 is patentable over Hutchins *et al.* for the reasons discussed above with respect to the similar features of claim 11.

Claims 62-68, which depend directly from claim 58, are submitted as patentable for the same reasons as claim 58.

#### **Claims 59, 60, and 61**

Reconsideration of the rejection of claims 59, 60, and 61 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claims 59, 60, and 61 each define a reactor having at least **four liquid feed lines in selectable fluid communication with each of four or more reaction vessels**. Claim 1 similarly discloses four liquid feed lines in selectable fluid communication with each vessel. Hutchins *et al.* teach only **two** multiple port dispensing valves 109, 146 capable of selectable fluid communication, as discussed above with respect to claim 1. As such, Applicants submit that claims 59, 60, and 61 are patentable over Hutchins *et al.* for the reasons discussed above with respect to the similar features of claim 1.

Claims 62-68, which depend directly from claims 59, 60, and 61, are submitted as patentable for the same reasons as claims 59, 60, and 61.

#### **Claim 65**

Reconsideration of the rejection of claim 65 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 65 defines a reactor wherein the four or more reaction vessels are **removable liners** supported by wells formed in a reactor block. Hutchins *et al.* fail to disclose removable liners, as discussed above with respect to claim 42. As such, Applicants submit that claim 65 is patentable over Hutchins *et al.* for the reasons discussed above with respect to these similar features of claim 42.

#### **Claim 66**

Reconsideration of the rejection of claim 66 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 66 defines a reactor comprising **reactor block**, similar to the reactor block of claim 1. Hutchins *et al.* fail to teach or suggest such a reactor block. Thus, Applicants submit that claim 66 is patentable over Hutchins *et al.* for the reasons discussed above with respect to the similar features of claim 1.

Claim 66 also defines a reactor wherein the reactor block comprises one or more temperature control elements for **individual or modular temperature control** of the four or more reaction vessels, similar to claim 55. Hutchins *et al.* teaches only group temperature control via a bath, as discussed above with respect to claim 55. Thus, Applicants submit that claim 66 is patentable over Hutchins *et al.* for the reasons discussed above with respect to the similar features of claim 55.

#### **Claim 67**

Reconsideration of the rejection of claim 67 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 67 defines a reactor wherein each of the four or more reaction vessels is hermetically sealable. By including sealable reaction vessels, contaminants are reduced and reactions may be performed at pressures other than atmospheric. Hutchins *et al.* fail to teach or suggest hermetically sealable reaction vessels. Applicants disagree with the statement in the Office action that the vessels of Hutchins *et al.* are hermetically sealable or capable of being hermetically sealed.<sup>36</sup> Hutchins *et al.* merely discloses an apparatus for dissolution testing,

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<sup>36</sup> April 23, 2004, Office action, page 8, lines 13-14.

which does not require that the vessels be sealable. To the contrary, each of the control heads 38 includes a vertical passage 81 for dropping a tablet from above the control head, through the passage, and into a respective vessel.<sup>37</sup> This open passage eliminates any possibility that the vessels of Hutchins *et al.* are capable of being sealed, because the open vertical passage for delivery of a tablet is not sealed. Thus, in addition to failing to teach or suggest sealed vessels, with the vertical passage, Hutchins *et al.* also teach away from the present invention by motivating one skilled in the art to conclude that the vessels need not be nor can be sealed. As such, Applicants submit that claim 67 is patentable over Hutchins *et al.*

#### **Claim 68**

Reconsideration of the rejection of claim 68 under 35 U.S.C. §103(a) as being unpatentable over Hutchins *et al.* is respectfully requested.

Claim 68 defines a reactor wherein each of the four or more reaction vessels is pressurizable to a pressure of not less than about 50 psig. As discussed above with respect to claim 1, Hutchins *et al.* provide no teaching or suggestion to one skilled in the art regarding an apparatus for performing reactions at pressure. Thus, Applicants submit that claim 68 is patentable over Hutchins *et al.* for the reasons discussed above with respect to the similar features of claim 1.

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<sup>37</sup> U.S. Patent No. 6,060,024, column 3, lines 38-57.

**Conclusion**

Enclosed is a check in the the amount of \$290.00 (\$110.00 for a one-month extension of time and \$180.00 to cover the fee specified in 37 CFR §1.17(p) for submission of the Supplemental Information Disclosure Statement). The Commissioner is hereby authorized to charge any under payment or credit any over payment to Deposit Account No. 19-1345.

In view of the foregoing, favorable reconsideration and allowance of this application is requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'B. Klein', with a stylized flourish at the end.

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